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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,392	11/13/2001	Ioannis Pavlidis	H0002443-01	3013

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EXAMINER

DEJESUS, LYDIA M

ART UNIT	PAPER NUMBER
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2859

DATE MAILED: 12/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/008,392

Applicant(s)

PAVLIDIS, IOANNIS

Examiner

Lydia M. De Jesús

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-13,15-23,25-30,32-36 and 38-40 is/are rejected.
- 7) ☒ Claim(s) 3,14,24,31 and 37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 6, 2003 has been entered.

Information Disclosure Statement

2. The information disclosure statement filed August 29, 2003 has been placed of record and the references cited therein have been considered.

Specification

3. The amendment filed October 6, 2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: It is unclear whether the change made to the claim language related to "calculating" a change in blood flow rate, as opposed to transforming the thermal image data into blood flow rate data or determining a change of blood flow rate from the thermal image data, is supported by the scope of the specification.

Applicant is required to clearly state the portions of the Specification that provide support for these claim limitations, or cancel the new matter in the reply to this Office Action.

Claim Objections

4. Claims 9, 10, 11, 20, 21, 28, 29 are objected to because of the following informalities:

The use of "one or more" in the language of these claims makes the claim language confusing because it is unclear whether Applicant intends to claim --at least one-- or --a plurality of--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 4-13, 15-23, 25-30, 32-36 and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anbar in view of Stirbl et al. [U.S. Patent 5,507,291, hereinafter Stirbl] and Zucker et al. [U.S. Patent 5,603,328, hereinafter Zucker].

With respect to claims 12, 13 and 15-22: Anbar discloses a system for use in detecting deception of a person (see lines 44-52 of column 4), the system comprising: a thermal infrared imaging device operable to provide data of at least a region of a face of a person (see lines 11-13 of column 10); and a computing apparatus for use in determining whether the person is deceptive or non-deceptive (see line 8 of column 10 through line 14 of column 12).

Said thermal infrared image device is operable to provide thermal image data of more than one region of the face of the person, including at least a region proximate an eye of the person (see lines 43-56 of column 10).

Said thermal infrared image device is operable to capture thermal image data during at least a period of time during at least an elicited response from the person (see lines 17-26 of column 10) and the computer apparatus is further operable to track movement of at least the

Art Unit: 2859

region of the face of the person during the period of time (see steps 2-4 of the process described from line 8 of column 10 through line 14 of column 12).

The system disclosed by Anbar further comprises means for providing measurement of one or more physiological parameters obtained using thermal image data, in this case blinking rate, frequency of heartbeat and temperature, in addition to a measure of skin temperature homogeneity i.e., HST, and the computing apparatus if operable to determine whether the person is deceptive or non-deceptive based the HST obtained using thermal image data and the one or more physiological parameters (see steps 13-15 described from line 47 of column 11 to line 8 of column 12).

The computing apparatus is further operable to make a preliminary determinations of whether the person is deceptive or non-deceptive based on one physiological parameter, in this case temperature data, rate of eye blinking and frequency of heartbeat, and to make preliminary determination of whether the person is deceptive or non-deceptive based on the thermal image data, and thereafter, the computing apparatus is operable to confirm one preliminary determination by comparison to the other (see steps 7-15 described from line 5 of column 11 to line 8 of column 12).

However, Anbar fails to explicitly disclose said computing apparatus being operable upon the thermal image data to transform the thermal image data to blood flow rate data, wherein transforming the thermal image data comprises calculating change in blood flow rate, as recited in claim 12, and also fails to disclose the computing apparatus being further operable to classify the person as deceptive or non-deceptive based on a change of blood flow rate over time in the at least one region of the face, as recited in claim 13, and operable to determine whether a person is

deceptive or non-deceptive based on the blood flow rate data corresponding to the thermal image data captured during at least the elicited response, as recited in claim 18. Anbar also fails to disclose said means for providing measurement of said one or more physiological parameters comprises one or more invasive means for providing invasive measurement of said one or more physiological parameters, in addition to the change of blood flow rate calculated from the thermal image data.

Stirbl teaches that it is well known in the art to combine in a system for use in detecting deception, non-invasive measurement means, as a video camera and a microphone, and invasive means, such as a device in contact with or inserted into a patient to determine blood flow rate (see lines 25-41 of column 3), in order to measure a number of physiological parameters and determine, based upon said parameters, whether the person is deceptive or non-deceptive based on a number of elicited responses. Other physiological parameters include blood pressure, pulse rate, pupil size, which are to be compared to reference values to provide information used in evaluating interviewee's responses (see abstract). Moreover, Zucker teaches that it is well known in the art that thermal image data from an area of a subject can be transformed into rate of blood flow data, an image processor coupled to the thermal imager can be employed to calculate a rate of blood flow in a graft.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the computing apparatus of the system disclosed by Anbar to be operable to calculate from the thermal imaging data a change of blood flow rate in addition to the parameters determined by the computing apparatus of the system of Anbar, as Stirbl teaches that blood flow rate is among the parameters monitored by a lie detector apparatus and Zucker

Art Unit: 2859

teaches that the blood flow rate can be calculated from a thermal image of the subject, in order to increase the precision of the evaluation by extracting the most information from said thermal image data by the computing apparatus of Anbar.

It is further considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to add to the non-invasive measurement means of the system disclosed by Anbar, additional probes performing invasive measurements of other physiological parameters in order to compare the measured values with stored reference values to identify a change in the parameter, as taught by Stirbl, in order to increase the precision of the evaluation by combining the results from thermal image data with physiological parameters which are not directly related to the temperature of the subject.

With respect to claims 36 and 38-40: The system resulting from the combination of Anbar, Stirbl and Zucker which meets the structural limitations recited in said claims and will serve to monitor blood flow rate and to determine a physiological state of the person based on the blood flow rate information, among other measured physiological parameters.

With respect to claims 1,2, and 4-11: The method steps recited in said claims will be performed during the normal operation of the system resulting from the combination of Anbar, Stirbl and Zucker.

With respect to claims 23 and 25-28: As discussed above the combination of Anbar, Stirbl and Zucker will result in a system for use as a lie detector/polygraph, which will perform, during its normal operation, the method steps recited in said claims.

Allowable Subject Matter

7. Claims 3, 14, 24, 31 and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments, see Paper No. 16, filed October 6, 2003, with respect to the rejection(s) of claim(s) 1, 2, 4-13, 15-23, 25-30, 32-36 and 38-40 relying upon Anbar have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Anbar, in view of Stirbl and Zucker.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Williams et al. discloses a blood flow measuring apparatus and method. Thomas et al. discloses a vector lock-in imaging system that averages the successive frames as in-phase images and quadrature images based on the periodicity of the object field i.e., naturally occurring periodicity as blood flow driven at the pulse rate of the heart, to eliminate unsynchronous noise from the image. Voelz discloses a polygraph with improved cardiac monitoring. JP59195134 A discloses a related apparatus.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lydia M. De Jesús whose telephone number is (703) 306-5982. The examiner can normally be reached on 7:30 to 4:00 p.m., Monday through Friday.

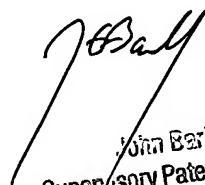
Application/Control Number: 10/008,392
Art Unit: 2859

Page 8

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F.F. Gutierrez can be reached on (703) 308-3875. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

LDJ
December 24, 2003


John Barlow
Supervisory Patent Examiner
Technology Center 2800